

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/SG2004/000361

## A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl. <sup>7</sup>: A61B 6/03

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
DWPI IPC A61B, G06T, G06F, G06K & keywords: tomograph, brain, landmark and similar terms  
Medline keywords: tomograph, brain, landmark and similar terms

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	IEEE Transactions on Medical Imaging. Volume 16(5) pages 610-616. October 1997 "Fully automatic identification of AC and PC landmarks on brain MRI using scene analysis" Verard et al Page 613 column 2	1, 4, 5
X	Journal of Digital Imaging. Volume 11(3 supp 1) pages 56-58. August 1998 "Anatomic labelling of PET brain images with automatic detection of AC and PC" Sun et al Figure 3	6, 11, 12
A	Psychiatry Research: Neuroimaging. Volume 67(2) pages 145-54. July 1996 "Landmark-based registration and measurement of magnetic resonance images: a reliability study" Arndt et al Whole document	

☒ Further documents are listed in the continuation of Box C

☒ See patent family annex

* Special categories of cited documents:	
"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E" earlier application or patent but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search  
30 November 2004

Date of mailing of the international search report  
3 DEC 2004

Name and mailing address of the ISA/AU  
AUSTRALIAN PATENT OFFICE  
PO BOX 200, WODEN ACT 2606, AUSTRALIA  
E-mail address: pct@ipaustralia.gov.au  
Facsimile No. (02) 6285 3929

Authorized officer

XAVIER GISZ  
Telephone No : (02) 6283 2064

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## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A, P	Journal Magnetic Resonance Imaging. Volume 20(4):572-80. October 2004 "Automatic registration of brain magnetic resonance images based on Talairach reference system" Han et al Whole document	
A	US 5,262,945 A (DeCARLI et al) 16 November 1993 Abstract	
A	US 2003/0210820 A1 (LACHNER et al) 13 November 2003 Abstract	
A	US 6,584,216 B1 (NYUL et al) 24 June 2003 Abstract	
A	US 2003/0009098 A1 (JACK et al) 9 January 2003 Abstract	
A	Patent Abstracts of Japan JP 2000126150 A (GE YOKOGAWA MEDICAL SYSTEMS LTD) 9 May 2000	

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**Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)**

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a)

**Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)**

This International Searching Authority found multiple inventions in this international application, as follows:

First Invention: Claims 1-5

Second invention: Claims 6-15

See extra sheet.

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☒ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

**Supplemental Box**

(To be used when the space in any of Boxes I to VIII is not sufficient)

**Continuation of Box No:**

The international application does not comply with the requirements of unity of invention because it does not relate to one invention or to a group of inventions so linked as to form a single general inventive concept. In coming to this conclusion the International Searching Authority has found that there are different inventions as follows:

1. Claims 1-5 are directed to a method of estimating the position of a brain landmark including the steps of determining whether a region of a midsagittal radiological image includes a group of pixels having intensity values in defined range. It is considered that determining whether a group of pixels have an intensity in a defined range comprises a first "special technical feature".
2. Claims 6-15 are directed to a method of estimating the position of AC and PC landmarks including the steps of using midsagittal radiological images to estimate the position of the AC and PC landmarks and generating axial radiological images and using these images to improve the estimate of the position of the AC and PC landmarks. It is considered that forming axial radiological images from midsagittal images and using these to improve the estimate of the position of the AC and PC landmarks comprises a second special technical feature.

Since the abovementioned groups of claims do not share any of the technical features identified, a "technical relationship" between the inventions, as defined in PCT rule 13.2 does not exist. Accordingly the international application does not relate to one invention or to a single inventive concept, *a priori*.

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

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This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member	
US	5262945		
US	2003210820	EP	1363242
US	6584216		
US	2003009098		
JP	2000126150		
Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001.			
END OF ANNEX			